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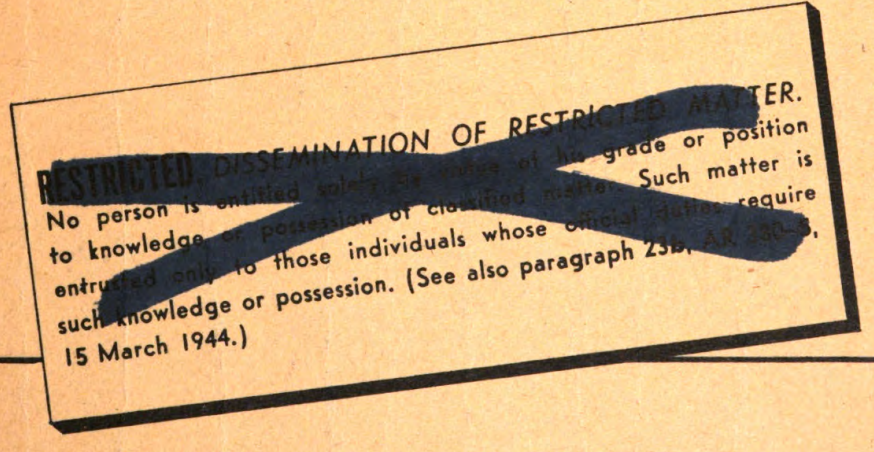
TM 11-1222

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept. of Army

TEST SET AN/MPM-4



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TM 11-1222

TEST SET AN/MPM-4

WAR DEPARTMENT • 9 MARCH, 1945

[redacted]

No person is entitled solely [redacted] **rade or position to knowledge or possessi** [redacted] **matter.** [redacted] **entrusted only to** [redacted] **uals whose official duties require suc** [redacted] **possession. (See also paragraph 23*b*, AR 380-5, 15 March 1944.)**

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WAR DEPARTMENT,

WASHINGTON 25, D.C., 9 March, 1945.

TM 11–1222, Test Set AN/MPM–4, is published for the information and guidance of all concerned.

[A. G. 300.7 (28 Nov 44).]

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:
J. A. ULIO,
Major General,
The Adjutant General.

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(For explanation of symbols see FM 21–6.)

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DESTRUCTION NOTICE

WHY —To prevent the enemy from using or salvaging this equipment for his benefit.

WHEN—When ordered by your commander.

HOW —1. Smash—Use sledges, axes, handaxes, pickaxes, hammers, crowbars, heavy tools.

2. Cut —Use axes, handaxes, machetes.

3. Burn —Use gasoline, kerosene, oil, flame throwers, incendiary grenades.

4. Explosives—Use firearms, grenades, TNT.

5. Disposal —Bury in slit trenches, fox holes, other holes. Throw in streams. Scatter.

USE ANYTHING IMMEDIATELY AVAILABLE FOR DESTRUCTION OF THIS EQUIPMENT.

WHAT—1. Smash—Tuning assemblies, tubes, meters, dials, switches, cases, chassis.

2. Cut —Cables, wiring transformer windings, choke windings.

3. Burn —Manuals, schematics, wooden cases, data obtained with test equipment.

4. Bend —Metal cases, chassis, nameplates.

5. Bury or scatter—All of the above materials after destroying their usefulness.

DESTROY EVERYTHING

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SECTION I
DESCRIPTION

1. INTRODUCTION.

a. The purpose of this manual is to serve as a guide for Test Set AN/MPM–4 and to present general information on each individual component. This manual is *not* to be used as a source of complete information on the components of Test Set AN/MPM–4. The components are listed below with the technical manuals which cover the individual components in detail.

Quantity	*Component*	*Technical Manual*
1	Calibrator BC–725–A	11–1048
1	Calibrator BC–726–A	11–1128
1	Signal Generator TS–301/U	11–2639
1	Chest CH–273	

b. Test Set AN/MPM–4, used in conjunction with Test Set AN/GPM–1 (see TM 11–1080), furnishes the test equipment required for third echelon maintenance of Radio Set SCR–296–A.

c. The components of Test Set AN/MPM–4 are carried in Chest CH–273, which is located on a shock-mounted base in the center of the van housing Test Set AN/GPM–1.

2. POWER.

The power for operating the test equipment can be obtained either from Power Unit PE–95, supplied with Test Set AN/GPM–1, or from a commercial source. Convenience outlets for 115-volt, 60-cycle power are arranged on both sides of the van. Six-volt, 12-volt, and 24-volt d-c power is supplied by batteries located in the front of the van. These batteries are charged by Rectifier Power Unit PP–34( )/MSM.

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3. CALIBRATOR BC–725–A.

Calibrator BC–725–A (fig. 1) provides a means of checking and calibrating the range unit of Radio Set SCR–296–A. It is contained in an olive-drab case measuring over-all 17 inches high by 18¾ inches wide by 23 inches deep.

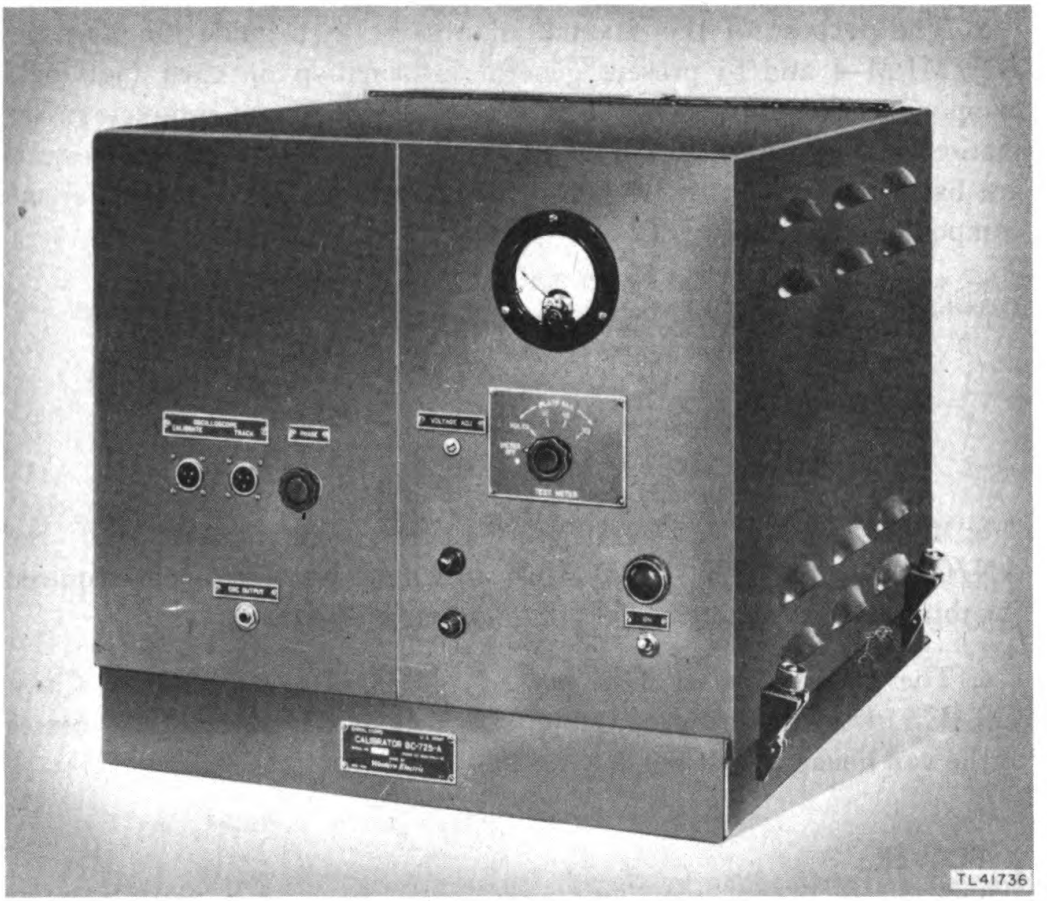

Figure 1. Calibrator BC–725–A, front view.

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4. CALIBRATOR BC–726–A.

Calibrator BC–726–A (fig. 2) is a crystal-controlled oscillator for setting and checking the modulation generator or keyer oscillator frequency in Radio Set SCR–296–A. It is inclosed in an olive-drab case measuring over-all 10½ inches high by 7 inches wide by 14 inches deep. A handle is provided on the front panel for carrying purposes and to facilitate sliding the chassis out of the case.

Figure 2. Calibrator BC–726–A, front view.

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5. SIGNAL GENERATOR TS–301/U.

Signal Generator TS–301/U (fig. 3) provides the correct signal voltage for aligning and calibrating the receiver unit of Radio Set SCR–296–A. The signal generator is inclosed in a case measuring overall 11¾ inches high by 21¾ inches wide by 10½ inches long. A handle is provided on each end.

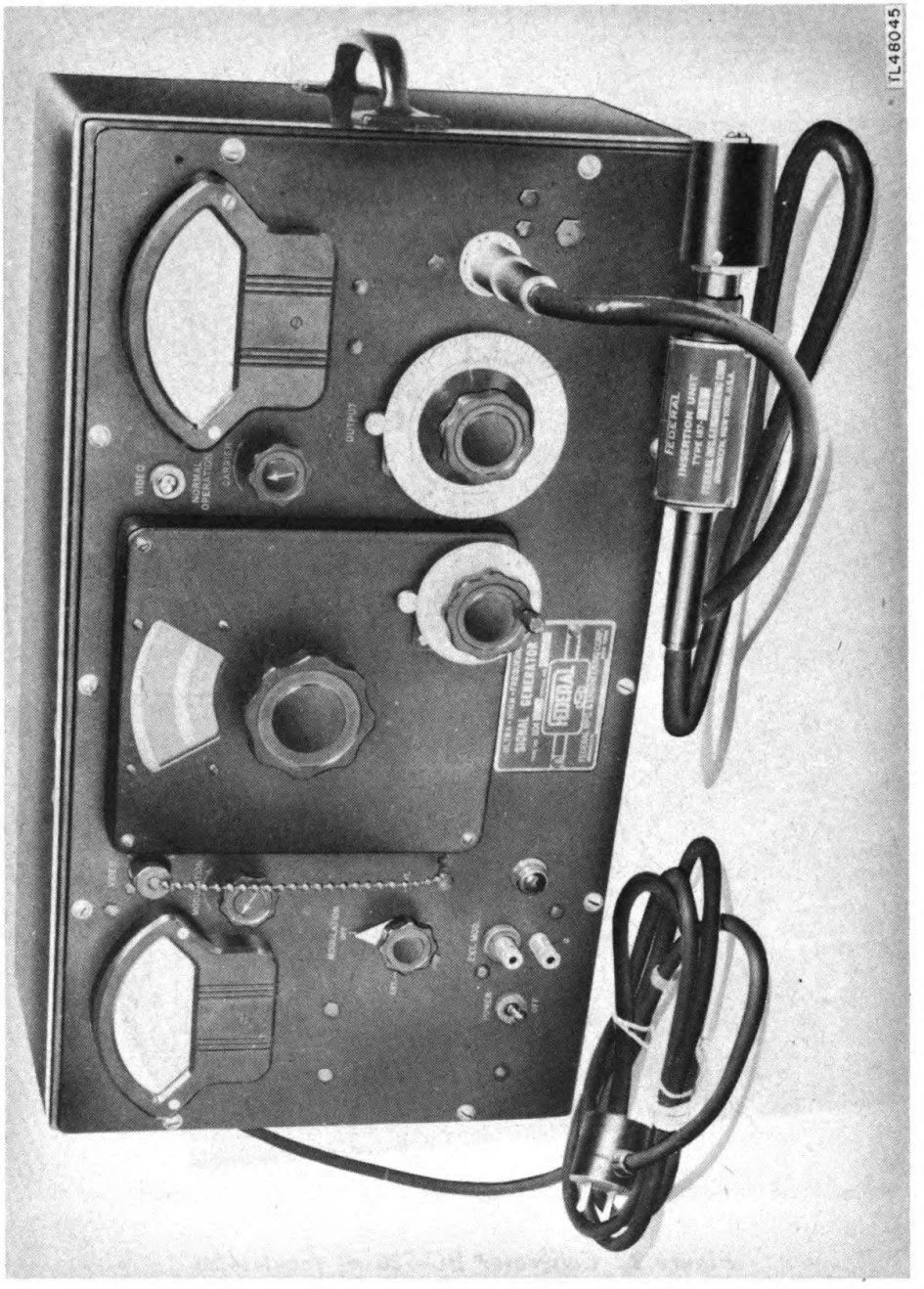

Figure 3. Signal Generator TS–301/U, front view.

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6. CHEST CH–273 (fig. 4).

Chest CH–273 is a large wooden chest used for packing, storage, and transportation of the equipment contained in this test set. It is mounted on a shock mounting to prevent damage caused by vibration of the truck when it is in motion. The chest is 42½ inches long, 22¼ inches wide, and 20¾ inches high.

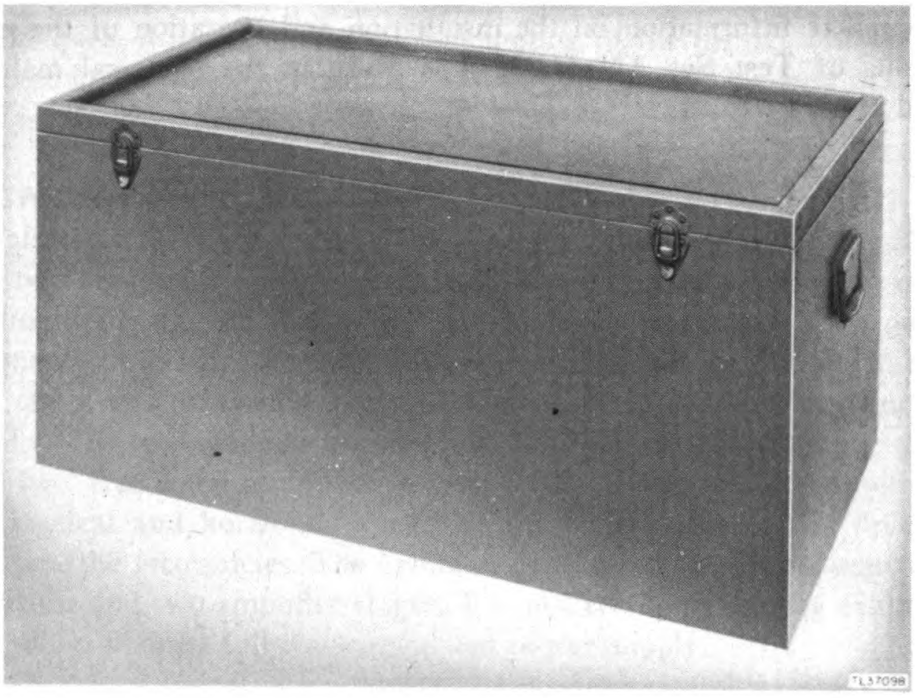

Figure 4. Chest CH–273, front view.

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SECTION II
INSTALLATION AND OPERATION

7. GENERAL.

Complete information on the installation and operation of the components of Test Set AN/MPM–4 is given in the technical manuals listed in paragraph 1.

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SECTION III
FUNCTIONING OF PARTS

8. INTRODUCTION.

Complete information on the functioning of the test-set components is given in the technical manuals listed in paragraph 1. General information is presented in this section.

9. CALIBRATOR BC–725–A.

Calibrator BC–725–A (fig. 1) contains a crystal-controlled oscillator and two frequency multiplier channels. One frequency multiplier channel multiplies the 29.5-kc output of the crystal oscillator to an output frequency of 295 kc; the other channel multiplies the 29.5-kc signal from the range unit of Radio Set SCR–296–A to an output frequency of 295 kc. The two channels are identical, each having two amplifier stages and two frequency multiplier stages. The two outputs are applied to the vertical and horizontal plates of the test oscilloscope in order to compare the frequencies. The oscillator consists of one crystal-controlled oscillator and two amplifier stages. The power supply for the calibrator is a self-contained full-wave regulated power supply.

10. CALIBRATOR BC–726–A.

Calibrator BC–726–A (fig. 2) contains a crystal-controlled oscillator, one amplifier stage, and an unregulated full-wave rectifier power supply. In operation, the output of Calibrator BC–726–A is fed to one set of the test oscilloscope plates, and the AUDIO output of the modulation generator of Radio Set SCR–296–A is fed to the other set of plates in order to check the modulation-generator frequency (par. 26a, TM 11–1305).

11. SIGNAL GENERATOR TS–301/U.

Signal Generator TS–301/U (fig. 3) contains a variable-frequency Hartley oscillator that produces the carrier frequency signal. The carrier signal may be modulated by an external source or by an audio frequency produced by a second Hartley oscillator in the signal generator. When external modulation is used, the vacuum tube which produces the internal modulation is switched into an amplifier circuit to amplify the external signal being applied. The power supply is a full-wave regulated rectifier. The signal generator is used in aligning the receiver of Radio Set SCR–296–A.

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SECTION IV
MAINTENANCE

NOTE: Failure or unsatisfactory performance of equipment used by Army Ground Forces and Army Service Forces will be reported on W.D., A.G.O. Form No. 468 (Unsatisfactory Equipment Report); by Army Air Forces, on Army Air Forces Form No. 54 (Unsatisfactory Report). If either form is not available, prepare the data according to the sample form reproduced in figure 5.

12. GENERAL.

The information contained in this section is to aid the repairman in maintaining the test equipment furnished with Test Set AN/MPM–4. Take care in using the test equipment in order to keep it in good operating condition. Make routine checks and inspections periodically to prevent serious damage to the equipment. For maintenance procedure for the specific test equipments refer to the relevant technical manuals (par. 1).

13. CHEST CH-273.

Clean the chest (fig. 4) periodically to prevent dust and dirt from accumulating in the test sets when they are stored. Any broken or cracked places in the paint should be repainted after the old paint has been removed from the affected area. Use sandpaper to remove the paint and to prepare the surface for the new coat of paint.

14. CORDS.

The cords furnished with the test equipment are rubber-covered and are subject to damage, weathering, and deterioration. If proper measures are taken, the useful life of the cords will be greatly extended.

a. Inspect the cords regularly for worn or damaged insulation. If any such places are found, repair or replace the damaged cord immediately.

b. When using the test equipment, arrange it so that the cords are not resting on any sharp objects or stretched tight over the edge of the bench or any test equipment. Avoid making sharp bends in the cords, since these may result in damage to the wire or insulation.

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15. UNSATISFACTORY EQUIPMENT REPORT.

a. When trouble in the equipment used by Army Ground Forces or Army Service Forces occurs more often than repair personnel feel is normal, War Department Unsatisfactory Equipment Report, W.D., A.G.O. Form No. 468, should be filled out and forwarded through channels to the Office of the Chief Signal Officer, Washington 25, D. C.

b. When trouble in equipment used by Army Air Forces occurs more often than repair personnel feel is normal, Army Air Forces Form No. 54 should be filled out and forwarded through channels.

c. If either form is not available, Form No. 468 (fig. 5) may be reproduced, filled out, and forwarded through channels. When Army Air Forces Form No. 54 is required but unavailable, reproduce Form No. 468 and forward it through channels in accordance with directions on Form 468.

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WAR DEPARTMENT

UNSATISFACTORY EQUIPMENT REPORT

FOR	TECHNICAL SERVICE: Signal Corps — MATÉRIEL		DATE: 20 Feb. 1945
FROM	ORGANIZATION: 885 Signal Repair Co.		STATION: APO 258, New York
TO	NEXT SUPERIOR HEADQUARTERS: Signal Officer	STATION: Army	TECHNICAL SERVICE:

COMPLETE MAJOR ITEM

NOMENCLATURE: Oscilloscope I-245	TYPE:	MODEL: Dumont 208-B	
MANUFACTURER: Dumont	U. S. A. REG. NO.: Order No. 817-MPD 44	SERIAL NO.: 6428	DATE RECEIVED: 15 Dec. 1944
EQUIPMENT WITH WHICH USED (If applicable): Radio Set SCR-584			

DEFECTIVE COMPONENT—DESCRIPTION AND CAUSE OF TROUBLE

PART NO. (R59) 3E8701-71	NAME: Potentiometer	MANUFACTURER: Centralab	DATE INSTALLED: 20 Dec. 1944

DESCRIPTION OF FAILURE AND PROBABLE CAUSE (If additional space is required, use back of form): Potentiometer burned out - Too low wattage rating.

DATE OF INITIAL TROUBLE	TOTAL TIME INSTALLED			TOTAL PERIOD OF OPERATION BEFORE FAILURE					
	YEARS	MONTHS	DAYS	YEARS	MONTHS	DAYS	HOURS	MILES	ROUNDS
26 Jan. 1945		1	6			5	15		

BRIEF DESCRIPTION OF UNUSUAL SERVICE CONDITIONS AND ANY REMEDIAL ACTION TAKEN: High operating temperature

TRAINING OR SKILL OF USING PERSONNEL			RECOMMENDATIONS (If additional space is required, use back of form)
POOR	FAIR	GOOD ✓	Potentiometer R59 should have a higher power rating.

ORIGINATING OFFICER

TYPED NAME, GRADE, AND ORGANIZATION	SIGNATURE
HAROLD T. MASON, CAPT., SIG. C., 885 Sig. Repair Co	Harold T. Mason

FIRST ENDORSEMENT

TO CHIEF	TECHNICAL SERVICE	OFFICE	
NAME, GRADE, AND STATION		STATION	DATE

Instructions

1. It is imperative that the chief of technical service concerned be advised at the earliest practical moment of any constructional, design, or operational defect in matériel. This form is designed to facilitate such reports and to provide a uniform method of submitting the required data.
2. This form will be used for reporting manufacturing, design, or operational defects in matériel, petroleum fuels, lubricants, and preserving materials with a view to improving and correcting such defects, and for use in recommending modifications of matériel.
3. This form will not be used for reporting failures, isolated material defects or malfunctions of matériel resulting from fair-wear-and-tear or accidental damage nor for the replacement, repair or the issue of parts and equipment. It does not replace currently authorized operational or performance records.
4. Reports of malfunctions and accidents involving ammunition will continue to be submitted as directed in the manner described in AR 750-10 (change No. 2).
5. It will not be practicable or desirable in all cases to fill all blank spaces of the report. However, the report should be as complete as possible in order to expedite necessary corrective action. Additional pertinent information not provided for in the blank spaces should be submitted as inclosures to the form. Photographs, sketches, or other illustrative material are highly desirable.
6. When cases arise where it is necessary to communicate with a chief of service in order to assure safety to personnel, more expeditious means of communication are authorized. This form should be used to confirm reports made by more expeditious means.
7. This form will be made out in triplicate by using or service organization. Two copies will be forwarded direct to the technical service; one copy will be forwarded through command channels.
8. Necessity for using this form will be determined by the using or service troops.

W. D., A. G. O. Form No. 468
30 August 1944

This form supersedes W. D., A. G. O. Form No. 468, 1 December 1943, which may be used until existing stocks are exhausted.

TL14114-A

U. S. GOVERNMENT PRINTING OFFICE 16—41566-1

Figure 5. War Department Unsatisfactory Equipment Report, sample entries.

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SECTION V
SUPPLEMENTARY DATA

16. RESISTORS AND CAPACITORS.

Figure 6 indicates the proper method for determining the correct values of resistors and capacitors when marked with the RMA (Radio Manufacturers' Association) or the AWS (American War Standards) color code.

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17. MAINTENANCE PARTS FOR TEST SET AN/MPM–4.

NOTE: Lists of maintenance parts for the individual components of Test Set AN/MPM–4 may be found in the technical manuals for the various equipments as indicated in paragraph 1.

Ref symbol	Signal Corps stock No.	Name of part and description
	3F2440–725A	CALIBRATOR BC–725–A.
	3F2440–726A	CALIBRATOR BC–726–A.
	2Z2599–273	CHEST' CH–273.
	3FK3820.5	SIGNAL GENERATOR TS–301/U.

Order No. 2738-MPD-45; 6806 copies; 29 May 1945

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